[runningheads]svmult

makeidx graphicx subeqnar multicol physprbb

[1]Upsymn1 m d D P

document *A Pattern Speed in the Galaxy's OH/IR Stars A Pattern Speed in the Galaxy's OH/IR Stars A Pattern Speed in the Galaxy's OH/IR Stars Victor P. Debattista1 Ortwin Gerhard1 Maartje N. Sevenster2 Victor P. Debattista et al. Astronomisches Institut, Universität Basel, Venusstrasse 7, CH-4102 Binningen, Switzerland RSAA/MAAAO, RSAA/MSSSO, Cotter Road, Weston ACT 2611, Australia

Introduction The Milky Way Galaxy (MWG) contains both a bar and spirals. The pattern speed/rotation frequency, Ω_p, of these components have been measured with a variety of models. For the bar, models have found values $40 \lesssim \Omega_p \lesssim 60\ km\ s^{-1}\ kpc^{-1}$ (Binney et al. 1991; Fux 1999; Englmaier & Gerhard 1999; Weiner & Sellwood 1999; Dehnen 1999; Bissantz et al. 2002). The spiral arm Ω_p is even more uncertain, with values in the range $13.5 \lesssim \Omega_p \lesssim 27\ km\ s^{-1}\ kpc^{-1}$ reported (Morgan 1990; Amaral & Lépine 1997; Mishurov & Zenina 1999).

A model-independent method, based on the continuity equation, for measuring pattern speeds in external galaxies has been developed by Tremaine & Weinberg (1984). This method can be extended to the MWG (Kuijken & Tremaine 1991; Debattista et al. 2002). For discrete tracers in the MWG, the Tremaine-Weinberg (TW) method is contained in the following expression: eqnarray $\Delta V \equiv \Omega_p R_0 - V_{\rm LSR} \equiv\ \mathcal{KP} - u_{\rm LSR}\mathcal{SP}$

Pattern Speed of the OH/IR Population

We extracted from the ATCA/VLA OH 1612 MHz survey a sample of $\sim$ 250 OH/IR stars which are relatively old (older than 0.8 Gyr) and bright (flux density greater than 0.16 Jy). These selection criteria give OH/IR stars between 4 and 10 kpc away from the Sun. We applied the TW analysis of Eqn. eqn1 to this sample, obtaining the results shown in Fig. fig1 (Debattista et al. 2002). Note that the value of $\mathcal{K}/\mathcal{P}$ has converged, within the errors, for $|l| > 30^\circ$. figure[ht] center [width=.2,angle=-90]debattistaF1.ps